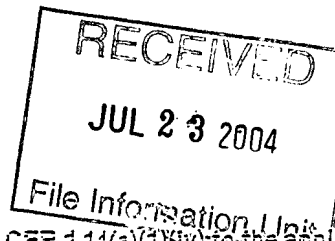


Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

REQUEST FOR ACCESS TO AN ABANDONED APPLICATION UNDER 37 CFR 1.14

Bring completed form to:
File Information Unit
Crystal Plaza Three, Room 1D01
2021 South Clark Place
Arlington, VA
Telephone: (703) 308-2733



In re Application of

Application Number

Filed

107/566977

Aug 13, 1990

Paper No.

#28

I hereby request access under 37 CFR 1.14(a)(1)(iv) to the application file record of the above-identified ABANDONED application, which is identified in, or to which a benefit is claimed, in the following document (as shown in the attachment):

United States Patent Application Publication No. _____, page, _____ line _____.

United States Patent Number 5670633, column _____, line, _____ or

WIPO Pub. No. _____, page _____, line _____.

Related Information about Access to Pending Applications (37 CFR 1.14):

Direct access to pending applications is not available to the public but copies may be available and may be purchased from the Office of Public Records upon payment of the appropriate fee (37 CFR 1.19(b)), as follows:
For published applications that are still pending, a member of the public may obtain a copy of:

- the file contents;
- the pending application as originally filed; or
- any document in the file of the pending application.

For unpublished applications that are still pending:

- (1) If the benefit of the pending application is claimed under 35 U.S.C. 119(e), 120, 121, or 365 in another application that has: (a) issued as a U.S. patent, or (b) published as a statutory invention registration, a U.S. patent application publication, or an international patent application publication in accordance with PCT Article 21(2), a member of the public may obtain a copy of:
 - the file contents;
 - the pending application as originally filed; or
 - any document in the file of the pending application.
- (2) If the application is incorporated by reference or otherwise identified in a U.S. patent, a statutory invention registration, a U.S. patent application publication, or an international patent application publication in accordance with PCT Article 21(2), a member of the public may obtain a copy of:
 - the pending application as originally filed.

B. Rhodes

Signature

BW RHODES

Typed or printed name

Registration Number, if applicable

703-413-3667

Telephone Number

7/23/04

Date

FOR PTO USE ONLY
RECEIVED
Approved by <u>[Signature]</u>
JUL 23 2004
Unit: <u>File Information Unit</u>

This collection of information is required by 37 CFR 1.14. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. BRING TO: File Information Unit, Crystal Plaza Three, Room 1D01, 2021 South Clark Place, Arlington, VA.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



US005670633A

United States Patent [19]

Cook et al.

[11] Patent Number: **5,670,633**[45] Date of Patent: **Sep. 23, 1997**[54] **SUGAR MODIFIED OLIGONUCLEOTIDES THAT DETECT AND MODULATE GENE EXPRESSION**[75] Inventors: **Phillip Dan Cook, Carlsbad; Andrew Mamoro Kawasaki, Oceanside, both of Calif.**[73] Assignee: **ISIS Pharmaceuticals, Inc., Carlsbad, Calif.**[21] Appl. No.: **835,932**[22] PCT Filed: **Aug. 12, 1991**[86] PCT No.: **PCT/US91/05720**§ 371 Date: **Mar. 5, 1992**§ 102(e) Date: **Mar. 5, 1992**[87] PCT Pub. No.: **WO92/03568**PCT Pub. Date: **Mar. 5, 1992****Related U.S. Application Data**

[63] Continuation-in-part of Ser. No. 566,977, Aug. 13, 1990, abandoned, and Ser. No. 463,358, Jan. 11, 1990, abandoned.

[51] Int. Cl.⁶ **C07H 21/00; C07H 21/02; C07H 21/03; A01N 43/04**[52] U.S. Cl. **536/23.1; 536/23.5; 536/23.6; 536/23.7; 536/24.1; 536/24.5; 536/25.3; 536/25.31; 514/14**[58] Field of Search **536/23.1, 23.5, 536/23.6, 23.7, 24.1, 24.5, 25.3, 25.31; 514/44**[56] **References Cited****U.S. PATENT DOCUMENTS**

4,381,344	4/1983	Rideout et al.	435/87
5,013,830	5/1991	Ohtsuka et al.	536/27
5,134,066	7/1992	Rogers et al.	435/91
5,212,295	5/1993	Cook	536/26.7
5,214,135	5/1993	Strivastava et al.	536/26.7
5,466,786	11/1995	Buhr et al.	536/26.26

FOREIGN PATENT DOCUMENTS

2017369	5/1990	Canada
0 260 032	8/1987	European Pat. Off.
0287313	10/1988	European Pat. Off.
0 399 330	5/1990	European Pat. Off.
0417999	3/1991	European Pat. Off.
3915462 A1	6/1990	Germany
41 10085 A1	10/1992	Germany
WO 90/15814	12/1990	WIPO
WO 91/06556	5/1991	WIPO
WO 91/15499	10/1991	WIPO
WO 92/07065	4/1992	WIPO

OTHER PUBLICATIONS

Uhlmann, et al., "Antisense Oligonucleotides: A New Therapeutic Principle," *Chemical Reviews*, 1990, 558.

Divakar, et al., "Approaches to the Synthesis of 2'-Thio Analogues of Pyrimidine Ribosides", *J. Chem. Soc. Perkins Trans., I*, (1990), 969-974.

Divakar, et al., "Reaction Between 2,2'-Anhydro-1-β-D-arabinofuranosyluracil and Thiolate Ions", *J. Chem. Soc. Perkin Trans. I*, (1982), 1625-1628.

Imazawa, et al., "Nucleosides and Nucleotides, XII. Synthesis and Properties of 2'-Deoxy-2'-mercaptouridine and Its Derivatives", *Chem. Pharm. Bull.*, 23, (1975), 604-610.

Ryan, et al., "Synthesis of 2'-Thio-D-ribose and 2'-Thio-adenosine Derivatives", *J. Org. Chem.*, 36, No. 18, (1971), 2646-2657.

Cohen in *Oligonucleotides: Antisense Inhibitors of Gene Expression*, CRC Press, Inc., Boca Raton, FL (1989), table of contents only.

P. S. Miller & P.O.P. Ts'O *Anti-Cancer Drug Design*, 2:117-128 (1987).

Ohtsuka et al., *European Journal of Biochemistry* 139:447-450 (1984).

W. Guschlbauer and K. Jankowski, *Nucleic Acid Res.* 8:1421 (1980).

Uesugi et al., *Tetrahedron Letters* 42:4073 (1979).

M. Ikehara et al., *Nucleic Acids Research* 5:1877 (1978).

M. Ikehara et al., *Nucleic Acids Res.* 5:3315 (1978).

M. Ikehara et al., *Nucleic Acids Res.* 4:4249 (1977).

J. Hobbs et al., *Biochemistry* 11:4336 (1972).

H. Inoue et al., *Nucleic Acids Research* 15:6131-6148 (1987).

S. Shibahara et al., *Nucleic Acids Research* 17:239 (1987) 2:117-128 (1987).

Arnott and Hukins, *Biochemical and Biophysical Research Communication*, 47:1504-1510 (1970).

Journal of American Chemical Society, 112:1253-1255, 1990.

S. Beaucage et al., *Tetrahedron Letters*, 22, 1859-1862, 1981.

M. Ikehara et al., *Tetrahedron* 34:1133-1138 (1978).

M. Ikehara *Accounts of Chemical Research*, 2:47-53 (1969).

Koole et al., *Journal of Organic Chemistry* 54:1657-1664 (1989).

R. Raganathan *Tetrahedron Letters* 15:1291-1294 (1977).

Codington et al. *Journal of Organic Chemistry*, 29:558-564 (1964).

E. T. Jarvi, et al., *Nucleosides & Nucleotides* 8:1111-1114 (1989).

L. W. Hertel, et al., *Journal of Organic Chemistry* 53:2406-2409 (1988).

(List continued on next page.)

Primary Examiner—Brian Stanton**Attorney, Agent, or Firm—Woodcock Washburn Kurtz Mackiewicz & Norris**[57] **ABSTRACT**

Compositions and methods are provided for the treatment and diagnosis of diseases amenable to modulation of the production of selected proteins. In accordance with preferred embodiments, oligonucleotides and oligonucleotide analogs are provided which are specifically hybridizable with a selected sequence of RNA or DNA wherein at least two of the 2'-deoxyfuranosyl moieties of the nucleoside unit is modified. Treatment of HIV, herpes virus, papillomavirus and other infections is provided.

3 Claims, No Drawings